We claim:

1. An electronic testing device comprising:

a housing;

a display visible from outside the housing, the display comprising a voltage level indicator, a voltage type and polarity indicator, and a voltage sense indicator;

a voltage polarity and type detection circuit electrically coupled to the voltage type and polarity indicator;

a pair of electrical contact test probes connected to the voltage polarity and type detection;

a voltage range scaling circuit for providing a scaled output signal indicative of the voltage applied between the pair of probes, the scaled output signal being electrically coupled to the voltage level indicator;

a non-contact voltage sensor; and

a non-contact voltage detect circuit electrically coupled to the non-contact sensor and to the voltage sense indicator for indicating that the non-contact voltage sensor is placed in the presence of a voltage.

2. The electrical testing device as defined in claim 1, further comprising a switch for selectively activating the non-contact voltage detection circuit.

3. The electrical testing device as defined in claim 1, wherein the non-contact voltage detect circuit is electrically coupled to at least one of the electrical contact probes and to the voltage sense indicator for indicating that the electrical contact probe is electrically coupled to a conductor with a voltage impressed thereon.

4. The electrical testing device as defined in claim 1, wherein the non-contact voltage sensor comprises a conductive element which capacitively couples to an AC voltage carried by a conductor.

5. The electrical testing device as defined in claim 1, wherein the voltage range scaling circuit comprises an impedance divider capacitively coupled between the electrical contact probes for attenuating an AC voltage impressed between the electrical contact probes differently from a DC voltage impressed between the terminals.

6. The electrical testing device as defined in claim 1, further comprising a programmable controller, wherein each of the display, the voltage polarity and type detection circuit, the voltage range scaling circuit, and the voltage detect circuit are electrically coupled to the programmable controller, and the programmable controller is programmed to receive data from each of the voltage polarity and type circuit, the voltage scaling circuit, and the voltage detect circuit, and to transmit signals to the display to provide a visual indicator to the user.

7. The electrical testing device as defined in claim 6, wherein the programmable controller includes a sleep mode such that the device defaults to a low power inactive mode unless the microprocessor receives any of a plurality of inputs.

8. The electrical testing device as defined in claim 1, further comprising at least one magnet coupled to the housing.

9. The electrical testing device as defined in claim 1, wherein the housing comprises an impact resistant molded rubberized material.

10. The electrical testing device as defined in claim 1, further comprising an acoustic circuit, the acoustic circuit being electrically coupled to one or more of the continuity check circuit and the AC voltage detect circuit to provide an acoustic output when a predetermined condition is met.

11. The electrical testing device as defined in claim 1, further comprising a continuity check circuit.

12. The electrical testing device as defined in claim 1, wherein said non-contact voltage sensor is contained within a projection of the housing.

13. An electronic testing device comprising:

a housing;

a display, the display comprising a voltage range indicator and a voltage type and polarity indicator;

a voltage polarity and type detection circuit electrically coupled to the voltage type and polarity indicator;

a pair of electrical contact test probes electrically coupled to the voltage polarity and type detection circuit;

a voltage range scaling circuit for providing a scaled output signal indicative of the voltage applied between the pair of probes, the scaled output signal being electrically coupled to the voltage level indicator; and

a voltage detect circuit electrically coupled to at least one of the pair of electrical testing probes and to the voltage sense indicator for indicating when the electrical testing probe has been electrically coupled to a conductor having a voltage impressed thereon, even when the other of the pair of electrical testing probes is not contacting any conductor.

14. The electrical testing device as defined in claim 13, further comprising a non-contact voltage sensor electrically coupled to the voltage detect circuit, the non-contact voltage sensor supplying a signal to activate the voltage detect circuit when the voltage sensor is placed in an electromagnetic field associated with a voltage.

15. The electrical testing device as defined in claim 13, further comprising a non-contact voltage indicator.

16. The electrical testing device as defined in claim 13, further comprising a non-contact voltage sensor electrically coupled to the voltage detect circuit, the non-contact voltage sensor supplying a signal to activate the voltage detect circuit when the non-contact voltage sensor is capacitively coupled to a nearby conductor having a voltage impressed thereon.

17. A voltage processing circuit for separately scaling AC and DC input voltage signals of different magnitudes to a predetermined full scale voltage value, the voltage processing circuit comprising:

an AC attenuator circuit coupled to each of a positive test lead and a negative test lead;

a rectifier circuit; and

a scaling circuit, wherein the AC attenuator circuit comprises an impedance that scales an input AC voltage electrically coupled between the positive and negative test leads to a predetermined value while allowing a DC input voltage to pass, the rectifier circuit rectifies the resultant AC voltage, and the voltage divider scales the rectifier output voltage to a predetermined scale value.

18. The voltage processing circuit as defined in claim 17, further comprising a voltage type and polarity circuit, the voltage type and polarity circuit comprising a voltage dividers, an AC attenuator, and a rectifier circuit, electrically coupled to each of the positive and negative test leads, wherein the output of each of the first and second circuits provides a digital signal indicative of the type and polarity of an input voltage electrically coupled between the positive and negative test leads.

19. The voltage processing circuit as defined in claim 17, wherein the AC attenuator circuit comprises a capacitor and first, second, and third resistors, the input of the first resistor being electrically coupled in series with the positive test lead, the input of the second resistor being electrically coupled in series with the negative test lead, the third resistor being coupled in series with the capacitor, the series combination of the capacitor and resistor being coupled between the output ends of the first and second resistors.

20. The voltage processing circuit as defined in claim 17, wherein the rectifier circuit comprises a full wave rectifier.

21. The voltage processing circuit as defined in claim 17, wherein the scaling circuit comprises a voltage divider.

22. The voltage processing circuit as defined in claim 17, further comprising a continuity check circuit.

23. The voltage processing circuit as defined in claim 22, wherein the continuity check circuit comprises a voltage source coupled to the positive test lead and a switch coupled to the negative test lead, the switch being activated by the voltage source when a conductor is applied between the positive test lead and the negative test lead.

24. The voltage processing circuit as defined in claim 23, wherein the ac attenuation circuit and the rectifier circuit provide a high impedance between the positive test lead and the negative test lead, the high impedance minimizing current flow from the voltage source to ground through the positive test lead and the negative test lead when continuity does not exist.

25. A circuit for selectively attenuating input AC voltage signals while allowing DC voltage signals to pass, the circuit comprising:

a first and a second input lead;

a first, a second, and a third resistor, each of the first, second, and third resistors having an input and an output; and

a capacitor, wherein the input of the first resistor is electrically coupled in series with the first input lead, the input of the second resistor is electrically coupled in series with the second input lead, the third resistor is coupled in series with the capacitor, and the series combination of the capacitor and resistor is electrically coupled between the outputs of the first and second resistors.

26. An electrical testing device, comprising:

a housing;

a display visible from outside of said housing;

a pair of test probes;

a voltage sensing circuit contained within said housing and electrically connected to said test probes and to said display, said voltage sensing circuit detecting when said test probes are electrically coupled each to a different one of two conductors between which a voltage difference exists and outputting a signal to said display which indicates to a user the magnitude of the voltage between the conductors;

a non-contact voltage sensor;

a voltage sense indicator; and

a non-contact voltage sense circuit for detecting when said non-contact voltage sensor is capacitively coupled to a conductor carrying a voltage and outputting a signal to said voltage sense indicator to indicate to a user that said voltage is sensed.

27. An electrical testing device as defined in claim 26, wherein said non-contact voltage sensor is in a projection of the housing.

28. An electrical testing device as in claim 26, further comprising circuitry that indicates to a user when a single one of the probes is placed in contact with a conductor on which a voltage is impressed.

29. An electrical testing device, comprising:

a housing;

a display visible from outside of said housing;

a pair of test probes;

a voltage sensing circuit contained within said housing and electrically connected to said test probes and to said display, said voltage sensing circuit detecting when said test probes are electrically coupled each to a different one of two conductors between which a voltage difference exists and outputting a signal to said display which indicates to a user the magnitude of the voltage between the conductors;

a voltage sense indicator; and

a single probe voltage sense circuit for sensing when a single one of said probes is in electrical contact with a conductor having a voltage impressed on it, said single probe voltage sense circuitry producing a signal which indicates to a user of the device that said conductor has a voltage impressed on it.

voltage at the inputs is not above this threshold, the voltage at **+DC** is a logic low (near zero volts). Note that, when a DC input signal is presented between the **RED** and **BLACK** input terminals, a logic low will appear at the **–DC** output because the signal will not meet the predetermined threshold established by circuit **31b** comprising components **R4, C4, R11, U2, D6, R12** and **C8** described below. Also, because a minimum input voltage is required, a logic high output signal will not result at the **+DC** output when the **RED** and **BLACK** terminals are coupled to a conductor for purposes of conducting a conductivity check.

[0021] Consider now the processing of an AC voltage or a negative DC voltage applied between the **BLACK** and **RED** leads by the voltage type and polarity circuit **31b**. The negative DC or AC voltage is sensed and processed by components **R4**, **C4**, **R11**, **D6**, **R13**, **C8**, and the inverters comprising pins 1, 2, 3 and 4 of **U2**. The operation of this circuitry is identical to the operation of components **R3, C3, R10, D5, R12, C7**, and inverters of **U2** as described above. The result is a voltage at point **-DC**. The point **-DC** is logic high when a negative DC voltage or AC voltage is sensed at **RED** and **BLACK** inputs and has a sufficiently negative magnitude. This input value is typically -5 volts but could be changed by different component value selection. If the input voltage at the inputs is not below this threshold, the voltage at **-DC** is a logic low. The two points **+DC** and **-DC** provide logic level inputs to the microprocessor block **70**, which employs digital logic to determine whether the input signal is an AC, positive DC, or negative DC signal and drives an appropriate LED in the LED block **50**. If the **+DC** is high and **-DC** is low then the input is construed by the microprocessor block **70** to be a positive DC voltage. On the other hand, if the **+DC** is low and **-DC** is high, then the input is a negative DC voltage. If both **+DC** and **-DC** are high, then the input is an AC voltage. If the voltage at both of **+DC** and **-DC** are low, then the input is deemed to be neither AC or DC.